WIRB
Final Report

Project Name: **Walnut Creek Watershed Project**

Project Number: **1014-008**

Huc # :**10240002- West Nishnabotna River Basin**

Soil and Water Conservation District: **Montgomery & East Pottawattamie**

Planning Period: **Jan 1, 2011 to June 30, 2014**

Date Report Prepared: **June 1, 2014**

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INTRODUCTION

Walnut Creek is a tributary to the West Nishnabotna River in Southwest Iowa. The 144,000 acre watershed is long and narrow in shape, averaging four miles wide and flowing through six counties, stretching sixty-two miles from its headwaters in Shelby County to its confluence with the West Nishnabotna River in Fremont County. Soils in the watershed are loess derived making them extremely fertile and erosive.

As throughout much of the region, sediment delivery to the stream is the primary resource concern. Although tillage practices employed on row crop land is generally good, the number of acres and shape of the watershed are conducive to a high delivery rate of sediment to the stream. Therefore, despite the fact that there is a great deal of reduced and no-till practices in the watershed, sheet and rill erosion on cropland is the main soil and water resource concern. Sediment delivery to Walnut Creek from cropland is aggravated by erosion in areas of concentrated flow throughout the watershed. Due to the slope of the landscape, outside the floodplain, classic and ephemeral gully erosion is a significant problem.

Another major source of sediment delivery to the stream stems from erosion that takes place in the stream corridor itself. Walnut Creek is significantly incised but in most areas, due to prior channelization, stream channel degradation and other modifications have taken place in the corridor. Despite all of these modifications, the streambed is beginning to reach equilibrium and the floodplain is being restored. Occasionally, however, high flows reap havoc in the corridor and undermine the stream bank resulting in significant sediment loads being delivered to the stream once again. Although grade has been controlled in the main channel by in-stream grade control structures, there is significant grade differential between the areas of concentrated flow and the main channel itself. These areas are currently experiencing severe head cutting.

Flooding is also a major concern in the Walnut Creek basin. Flash flooding damages homes, roads, bridges, and cropland in the watershed. The most significant area of impact occurs well downstream in Fremont County where Walnut Creek outlets into the West Nishnabota River.

The net result of all these processes is that in many reaches of Walnut Creek sediment has smothered rock substrate, destroying critical fish and aquatic life habitats. Walnut Creek is designated as Class B(WW) stream. Uses include wildlife, fish, aquatic and semi-aquatic life. All uses are listed as partially supporting.

Upon completion of a comprehensive watershed assessment, a 40,000 acre priority area was selected to focus conservation efforts. In July of 2009 and again in 2011 the Montgomery and East Pottawattamie Soil and Water Conservation Districts were awarded grants from the Watershed Improvement Review Board to begin working on the above described issues. The following is the final report of the practices installed through the use of the 2011 grant.

FINANCIAL ACCOUNTABILITY

The primary cost share mechanism used in this grant was the Watershed Improvement Review Board funds contributing $200,000 or 54% of the total funds expended. Private landowners contributed $126,378.11 or 36% of the total funds expended. The Iowa Financial Incentive program totaled $10,000. Total dollars expended equaled $372,659.66.

WIRB Funds Expended by Line Item

Grant Agreement Budget Line Item	Total Funds Approved($)	Total Funds Expended ($)	Total Funds Obligated ($)	Available Funds ($)
Terrace Systems	$150,000	$150,494.70	$0	$0
Grade Stabilization Structures	$50,000	$49,505.30	$0	$0
Totals	$200,000	$200,000	$0	$0
Difference				

Funding Expended by Source

	Cash		In-Kind Contributions		Total	
Funding Source	Approved Application Budget ($)	Actual ($)	Approved Application Budget ($)	Actual ($)	Approved Application Budget ($)	Actual ($) Expended
WIRB	$200,000	$200,000			$200,000	$200,000
IFIP	$10,000	$10,000			$10,000	$10,000
Landowners	$60,000	$126,378.11			$60,000	$126,378.11
PF	$5,000	$5,000			$5,000	$290
CRP	$13,000	$13,590			$13,000	$13,590
Staff Time (NRCS,DSC, SWCD)			$25,280	$17,691.55	$25,280	$17,691.55
Totals	$288,000	$354,968.11	$25,280	$17,691.55	$313,280	$372,659.66

Approved WIRB contribution percentage 64 %
Actual WIRB contribution percentage 54 %

ENVIRONMENTAL ACCOUNTABILITY

Project Goals:

The primary goal of the Montgomery and East Pottawattamie SWCDs' is to address the resource concerns discovered in the watershed assessment by controlling drainage as it enters Walnut Creek. This will not only curve the sediment load to the stream but will also slow the rate at which water enters and travels through the creek. The milestones established for this grant were to construct sixty-five thousand feet of terraces on cropland, two grade stabilization structures to control drainage, cutback areas, and gully erosion, and fifty acres of filter strips installed along riparian areas of Walnut Creek to control delivery to the stream and to aid in the stabilization of erosive stream banks. All of these practices should have reduced sediment delivered to Walnut Creek by 200 tons per year.

Ranking Method:

In order to prioritize which applications would be funded a formula which calculates the cost per sediment ton reduced was used to rank practice applications. RUSLE 2 was calculated for every practice according to their conservation plan and each project was run through the Division of Soil Conservation's Sediment Delivery Calculator. The total cost of each project was then divided by the sediment delivery reduction to rank the cost per ton of sediment reduction.

Practices Installed/Environmental Benefits:

The following table quantifies the types and number of practices actually installed and their sediment delivery reduction from those practices:

Grant Agreement Conservation Practices & Activities	Unit	Approved Application Goal	Accomplishments	% Completion
Terrace Systems	Feet	65,000	67,650	104%
Grade Stabilization Structures	Num	2	3	150%
Filter Strips	Ac.	50	16.3	32%
Waterways	Ac.	0	5.5	
General CRP	Ac.	0	43.6	
Sediment Delivery Reduction	Tons /Year	200	1,749 =109 dump trucks	874%
Phosphorous Reduction	Lbs/ Year	260	2,273.7	874%

PROGRAM ACCOUNTABILITY

Administration:

Practices were surveyed and designed according to NRCS specifications by qualified technical staff. Individual practices were ranked in order to prioritize. Cost share applications were administrated by both SWCDs' whom had administered these types of projects on numerous occasions in the past. Maintenance agreements for all practices were recorded at the courthouse.

Deviations from original grant:

Most of the project went as planned. Terrace footage installed was extremely close to our estimate. The project fell short on their filter strip goals. CRP funding was utilized for waterways, general CRP, and filter strips whenever possible. The PF incentive for filter strips was also utilized. As it turned out high commodity prices proved to deter most landowners from installing these practices. We were able to install one more grade stabilization structure than planned. The fall of 2013 was extremely dry and we were forced to postpone construction, therefore a project extension was applied for and granted to extend the project through the spring of 2014.

Future Watershed Work:

Watershed work continues in the priority area through the use of two additional WIRB grants. Landowner interest is extremely high, especially in Montgomery County. Many landowners have installed practices without cost share. An amazing amount of work has been done in the past five years. The next three years will be much of the same. Attention will be shifted to management practices in the priority area.